

Remarks

Applicants respectfully request reconsideration of the rejection of the claims in view of the above amendments and the remarks set forth below. Claims 1, 3-14, and 16-20 remain in the application. Claims 1 and 14 are amended. Claims 2 and 15 were cancelled. Claims 5, 12, 17, and 18 were previously presented. Claims 3-4, 6-11, 13, 16, 19 and 20 remain unchanged.

35 U.S.C. §103

Claims 1, 3, 4, 6, 7, 12, 14, 16, 17, 19, and 20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Peters (4,512,192) in view of Merhav (4,590,801) and Zabler et al. (5,703,293). Under 35 U.S.C. § 103, the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to be obvious in light of the teachings of the references (MPEP § 706.02(j)).

Amended claim 1 recites, inter alia, a “vibratory rotational rate sensor comprising . . . a vibratory element including a pair of vibratory masses disposed symmetrically along a common axis for vibration along the axis . . . a driver coupled to only one of the vibratory masses for inducing periodic counter-phase motion in the pair of vibratory masses along the axis . . . a first sense circuit coupled to only one of the vibratory masses for sensing motion of the vibratory mass in only one direction orthogonal to the vibratory axis . . . and a second sense circuit coupled to the same one of the vibratory masses for sensing motion of the vibratory mass in only another direction orthogonal to the vibratory axis.” (Emphasis added). Support for the amendment to claim 1 is at least provided in applicants’ specification on page 8, lines 15-30 and FIG. 9.

Peters appears to be directed towards a two axis angular rate and specific force sensor using vibrating accelerometers (10, 12) that are connected to the outer faces of two prongs (20a, 20b) of a tuning fork (20). The accelerometers (10, 12) appear to be vibrated on the tuning fork (20) by magnets (26, 30) and drive coils (28, 32). (FIG. 2; Col. 3, lines 43 to 63). The Peters tuning fork structure also includes one accelerometer sensor attached to the vibrating mass structure on each side of the tuning fork. (FIG 2; Col. 3, line 63 to Col. 4, line

7). However, the Peters tuning fork does not appear to show a “first sense circuit coupled to only one of the vibratory masses for sensing motion of the vibratory mass in only one direction orthogonal to the vibratory axis . . . and a second sense circuit coupled to the same one of the vibratory masses for sensing motion of the vibratory mass in only another direction orthogonal to the vibratory axis.” Further, placing both accelerometer sensor structures with the vibrating mass on only one side of the Peters tuning fork would prove impractical, as it would appear that the tuning fork structure must maintain equal weight on either side of the tuning fork in order to operate properly. Therefore Peters does not show or teach at least the “first sense circuit coupled to only one of the vibratory masses for sensing motion of the vibratory mass in only one direction orthogonal to the vibratory axis . . . and a second sense circuit coupled to the same one of the vibratory masses for sensing motion of the vibratory mass in only another direction orthogonal to the vibratory axis “ elements of amended claim 1.

Merhav appears to be directed to a tuning fork structure describing the arrangement for vibrating the pair of vibratory masses by driving only one coil. (FIG. 8; Col. 13, lines 46-48). However, as with Peters, the Merhav tuning fork does not appear to include a “first sense circuit coupled to only one of the vibratory masses for sensing motion of the vibratory mass in only one direction orthogonal to the vibratory axis . . . and a second sense circuit coupled to the same one of the vibratory masses for sensing motion of the vibratory mass in only another direction orthogonal to the vibratory axis.” Therefore Merhav does not show or teach at least the “first sense circuit coupled to only one of the vibratory masses for sensing motion of the vibratory mass in only one direction orthogonal to the vibratory axis . . . and a second sense circuit coupled to the same one of the vibratory masses for sensing motion of the vibratory mass in only another direction orthogonal to the vibratory axis “ elements of amended claim 1.

Zabler appears to be directed at a structure that includes rotational rate sensors fabricated using a silicon structure. The Zabler silicon structure appears to operate using two rotational rate sensors including two vibratory masses and two sense circuits mounted on each vibratory mass. (Col. 4 lines 14 to 24). Two sensors are needed, with each sensor including a separate vibratory mass and separate sense circuits, in order to advantageously measure the

forces in each of three directions. (Col. 1, lines 28 to 40). The Zabler silicon structure does not appear to include a “first sense circuit coupled to only one of the vibratory masses for sensing motion of the vibratory mass in only one direction orthogonal to the vibratory axis . . . and a second sense circuit coupled to the same one of the vibratory masses for sensing motion of the vibratory mass in only another direction orthogonal to the vibratory axis.” Therefore Zabler does not overcome the deficiencies found in either Peters or Merhav and does not show or teach at least the “first sense circuit coupled to only one of the vibratory masses for sensing motion of the vibratory mass in only one direction orthogonal to the vibratory axis . . . and a second sense circuit coupled to the same one of the vibratory masses for sensing motion of the vibratory mass in only another direction orthogonal to the vibratory axis “ elements of amended claim 1.

As a result, neither Peters, nor Merhav, nor Zabler, taken alone or in combination, teach or suggest at least the “first sense circuit coupled to only one of the vibratory masses for sensing motion of the vibratory mass in only one direction orthogonal to the vibratory axis . . . and a second sense circuit coupled to the same one of the vibratory masses for sensing motion of the vibratory mass in only another direction orthogonal to the vibratory axis” elements of amended claim 1. Therefore, the applicants respectfully request reconsideration of the rejection of claim 1 in view of the above remarks.

Claims 3, 4, 6, 7, and 12 depend from amended claim 1 or depend from claims depending from amended claim 1, and should therefore also be allowable for the same reasons, as well as for the additional recitation contained therein. Applicants respectfully request reconsideration of the rejection of the claims in view of the above remarks.

Independent claim 14 is amended to include elements similar to the elements of amended independent claim 1 and should therefore be allowable for the same reasons discussed above as well as for the additional recitations contained therein. Therefore, it is respectfully proposed that the rejection for anticipation is overcome.

Claims 16, 17, 19, and 20 depend from amended claim 14 or depend from claims depending from amended claim 14, and should therefore also be allowable for the same reasons, as well as for the additional recitation contained therein. Applicants respectfully requests reconsideration of the rejection of the claims in view of the above remarks.

Claims 5 and 18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Peters in view of Merhav and Zabler and further in view of Varnham et al. (5,226,321). Claim 5 depends from amended claim 1 and should therefore also be allowable for the same reasons, as well as for the additional recitation contained therein. Claims 18 depends from amended claim 14 and should therefore also be allowable for the same reasons, as well as for the additional recitation contained therein. Applicants respectfully requests reconsideration of the rejection of the claims in view of the above remarks.

Claims 8-11 and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Peters in view of Merhav and Zabler and further in view of Lutz (5,604,312). Claims 8-11 and 13 depend from amended claim 1 or depend from claims depending from amended claim 1, and should therefore also be allowable for the same reasons, as well as for the additional recitation contained therein. Applicants respectfully requests reconsideration of the rejection of the claims in view of the above remarks.

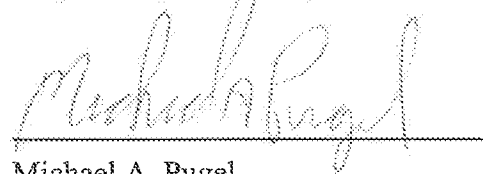
Having fully addressed the Examiner's rejections it is believed that, in view of the preceding amendments and remarks, this application stands in condition for allowance. Accordingly then, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicants' attorney at (317) 587-4027, so that a mutually convenient date and time for a telephonic interview may be scheduled.

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No fees, other than those discussed above, are believed due. However, if a fee is due, please charge the additional fee to Deposit Account 07-0832.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Michael A. Pugel", written over a horizontal line.

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